To: Federal Communications Commission

These are my comments pertaining to the Broadband Over Power Line (BPL) initiative. These comments are being made after reading all of the material that was prepared by the ARRL. I think I am qualified to comment on this proposal for many reasons. Number one I have been a licensed radio amateur since I was 13 in 1968 and I have held an Extra Class license since I was 16. I am an Electrical Engineer with an MSEE from Columbia and BSEE from RPI (graduated with 4.0GPA). I was employed for 23 years by Bell Laboratories later to become Lucent Technologies where I spent the last 5 years of my career as Distinguished Member of Technical Staff specializing in EMC (Electromagnetic Compatibility) of telephony systems. My expertise is in EMC, RF, Analog Design, Data Communication Circuits and synchronization. My present position (since 2001) is as Distinguished Engineer at Fujitsu Network Communications where I work in synchronization, analog design and EMC consulting. I am a very active radio amateur and my primary focus is HF radio contesting. I have designed and built my own contesting station (about 25 antennas on 3 towers) on a 24 acre piece of property in Warren County, NJ.

The problems with BPL are in two categories: EMI (Electromagnetic Interference) from BPL to other services and Electromagnetic Susceptibility of BPL to radio transmitters from other services. These problems are caused by the broad frequency range (2-80MHz) and use of unshielded power lines as the transmission media.

Firstly I will deal with the EMI from BPL to other services. The Section 15.209 Radiated Emissions Limits for BPL are for the most part about the same as the Class A limits for digital devices such as telephony equipment. I have a lot of experience in this area from my EMC work at Lucent. The thought of allowing Class A type emissions over the whole spectrum from 2 to 80MHz over long power lines running down residential streets is preposterous. The intention of Class A limits is for digital equipment in an industrial environment such as a telephone central office. The emissions from this equipment is contained in a particular location and the field strength will drop off as the inverse of distance from the EMI source. With BPL the emissions are not from a point source but instead from a long line or perhaps even a mesh of power lines. In urban or even suburban environments the noise level may not drop off at all since BPL systems could be radiating from power lines in all directions. If nothing else, limits more in line with Class B would make more sense because of the way that BPL will be swamping residential locations in background noise. Also, Class A and Class B limits were meant for digital equipment which tends to have dominant emissions components at harmonics of the clock frequencies of the equipment. The radiated spectrum from these kinds of equipment is actually spectrally sparse; dominant emissions spikes at clock harmonics and almost nothing in between. BPL on the other hand is spread spectrum and will probably radiate at levels plus or minus of the Class A limits over the whole spectrum from 2MHz to 80 MHz - there will be no escaping it. Radio services that depend on weak signal reception will be obliterated. This includes amateur radio, broadcast radio and television, citizen's band and various kinds of commercial and emergency communications. In my hobby niche, radio contesting, we endeavor to receive signals that are down in the noise floor of the atmospherics and equipment. Analysis by the ARRL has shown that at a distance of 30 meters from BPL carrying power lines the HF

noise floor would come up as much as 56dB and of course at 10 meters distance it would be approximately 10 dB worse. I might as well throw my radio equipment away if this happens. But of course this is not just a problem for amateur radio. Broadcast radio and TV which requires 50 to 60 dB SNR for good quality reception will be decimated except in areas very close to the broadcast transmitters. There could be disruptions of FAA and emergency communications. So it is clear that BPL will be nothing short of a disaster for all types of weak and moderate signal radio reception.

Radiated susceptibility of BPL systems from all types of radio transmitters may prove to be an even bigger problem. The ARRL has shown that even a modest amateur radio transmitter (400W @ 7MHz into a dipole) located 20 meters from a BPL carrying power line can couple 4W of power. It is certain that this will wipe out the BPL receivers operating on that line due to front end overload. Even transmitters that are outside of the BPL intended spectrum will probably be strong enough to bring down or impair the 10mW BPL transmission. BPL systems located anywhere in the vicinity of powerful commercial broadcast transmitters could never work. Also, various types of mobile transmitters like police, ambulance, business radio, citizen's band and amateur radio transmitters in cars will cause intermittent BPL outages as these transmissions occur along power lines that run parallel to roads. This will result in endless headaches for the BPL customers, BPL carriers and FCC enforcement not to mention harassment of licensed radio amateurs and CB operators by irate BPL subscribers. This seems like a recipe for pandemonium.

With all the problems that cable TV companies have with ingress and egress in a system that is supposed to be isolated with shielding, it should be clear that the BPL proposal with open wire transmission is unworkable. There is certainly no need BPL to provide broadband access. I think that the abundance of twisted pair copper, fiber, cable and satellite broadband access alternatives should obviate the need for BPL. The BPL technique must have either been invented by persons with no practical understanding of the realities of the RF spectrum or with a vindictive sense of humor directed at RF spectrum users and potential BPL subscribers. Please do not allow this disaster to happen.

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